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ABSTRACT

This study examined the widely popular "Business Week" and "U.S. News & World Report" rankings of the top business schools to determine their impact on the admissions outcomes, pricing policies, and career placement outcomes of the business schools they rank. The analysis indicated that both ranking systems have a significant impact on students and administrators in the short term and the long term, but employers are only impacted by long-term changes in ranking. While both ranking systems are shown to have significant effects, some evidence indicates that "Business Week's" ranking is slightly more influential with students and significantly more influential with recruiters, In general, a fall in either ranking system leads a school to become less selective because its applicant pool shrinks and declines in quality, and a smaller percentage of applicants who are accepted matriculate. In addition, administrators are forced either to cut tuition or increase grant and scholarship aid to attract more students from its declining applicant pool. A more favorable ranking allows a school to become more selective as it attracts higher quality students who are more eager to attend the university, and the school can then decrease its grant and scholarship aid or slightly raise its tuition. Employers do not respond to yearly changes in rank, but a prolonged change in a school's ranking by either system leads employers to change their behavior. A long-term increase in a program's ranking leads to more of its students' obtaining job offers, higher salaries for these offers, and more offers per student, in addition to an overall increase in the value of the MBA (as measured by change in salary). In a similar way, a program that encounters a long-term decline in rank will see its students obtain lower-paying jobs, fewer options for each student, and a devaluing of the program's MBA. (Author/SLD)

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The Impact of the *Business Week* and *U.S. News & World Report* Rankings on the Business Schools They Rank

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Honors Thesis
Spring 2000
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THE IMPACT OF THE *BUSINESS WEEK* AND *U.S. NEWS & WORLD REPORT* RANKINGS ON THE BUSINESS SCHOOLS THEY RANK

ABSTRACT

This paper examines the widely popular *Business Week* and *U.S. News & World Report* rankings of the top business schools to determine their impact on the admissions outcomes, pricing policies, and career placement outcomes of the business schools they rank. The analysis indicates that both ranking systems have a significant impact on students and administrators in the short term and long term, but employers are only impacted by long-term changes in ranking. While both ranking systems are shown to have significant effects, some evidence indicates that *Business Week*'s ranking is slightly more influential with students and significantly more influential with recruiters.

In general, a fall in either ranking system leads a school to become less selective because its applicant pool shrinks and declines in quality, and a smaller percentage of applicants who are accepted matriculate. In addition, administrators are forced to either cut tuition or increase grant and scholarship aid to attract more students from its declining applicant pool. A more favorable ranking allows a school to become more selective as it attracts higher quality students who are more eager to attend the university, and the school can then decrease its grant and scholarship aid or slightly raise its tuition.

Employers do not respond to yearly changes in rank, but a prolonged change in a school's ranking by either system leads employers to change their behavior. A long-term increase in a program's ranking leads to more of its students obtaining job offers, higher salaries for these offers, and more offers per student, in addition to an overall increase in the value of the MBA (as measured by change in salary). Similarly, a program which encounters a long-term decline in rank will see fewer of its students obtain lower-paying jobs, fewer options for each student, and a devaluing of the program's MBA.

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Chapter 1:
Introduction

In recent years, the MBA has become one of the most popular and fastest growing degrees in America. In 1974, 370 graduate business schools were in the U.S., but in the 25 years since, that number has drastically increased to more than 800 programs that produce 40,000 to 50,000 students annually with the degree[1]. Furthermore, with the explosion in popularity of the MBA, its price has skyrocketed as well; in 1988, the average tuition for an elite private business school was around $16,000. Today, that number has jumped to $26,000, an increase of over 60%[2].

With such a proliferation of programs available at such high costs, it has become increasingly important for the potential business school student to be able to distinguish between the various MBA programs. Prior to 1988, however, no source of information was readily available to help students make their decision. In the past decade, two publications, *Business Week* and *U.S. News & World Report* (henceforth *BW* and *USNWR*), have filled this void by publishing rankings of the top twenty to twenty-five business programs in the nation. *BW* publishes an entire book bi-annually (now in its sixth edition) which includes in-depth profiles of the top fifty business schools and the numerical ranking of the top twenty to twenty-five. *USNWR* annually publishes an issue of its magazine dedicated to graduate programs, and it includes a numerical ranking of the top 50 business schools as part of this issue.

As the only two systems of ranking the programs, it is no surprise that these rankings have become widely publicized and popular. *BW* reports that "hundreds of thousands of applicants" have used the various editions of its book[3], and *USNWR* calls its "Best Graduate Schools" issue a "No. 1 Bestseller[4]." In addition, the guides serve as sources of information for recruiters, who are anxious to hire the best candidates for their firms and for deans and administrators, as a benchmark of their program's success. Overall, both guides seem to have far-reaching influence in the business school

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[1] See p. 7, Green & Reingold (1999)
[2] Figures are not adjusted for inflation.
[3] Ibid. Chapter 4
[4] See cover of "Best Graduate Schools," *USNWR* (2000)

community. Despite the popularity of these rankings, however, no one has empirically determined what impact, if any, these rankings are having on the business schools or the students who attend them. The goal of this paper is to conduct that analysis in order to understand how the ranking systems have affected admissions outcomes, pricing policies, and placement success at the nation's top business schools.

How do the Rankings Work?

The most important and controversial portion of both publications is the numerical rankings of the business schools. One might assume that there is little need for more than one set of rankings, since both are attempting to answer the same question: How do the quality of the business schools compare to one another? Unfortunately the determination of "quality" is anything but straightforward, as is evidenced by the fact that the two magazines use vastly different methodologies to reach their conclusions. As a result, to fully understand the impact of each ranking system, it is important to illustrate the differences in the methods each publication employs.

BW uses survey data to construct its rankings; it surveys the two primary consumers of business schools: graduates and corporate recruiters. Every other year, the magazine sends a questionnaire with thirty to thirty-nine questions to recent graduates of each program it is attempting to rank. The questions cover topics such as teaching quality, course integration, job placement efforts, teamwork among classmates, and overall value of the degree. For instance, the 1998 survey included the questions: "Do you believe your MBA was worth its total cost in time, tuition, and lost earnings?" and "Overall, how did the quality of teachers compare with others you have had in the past?" For each question, the students rate their school on a scale of 1 to 10, and each school is then awarded an average total score leading to its graduate ranking[1]. In addition, for the Class of 1992 and beyond, *BW* included graduate survey data from the prior two bi-annual surveys in computing each school's score in order to increase the sample size[2].

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[1] See pp.78-79 Byrne (1988)
[2] See Chapter 4, Byrne (1993, 1995) and Chapter 4, Green & Reingold (1999)

Similarly, the magazine sends a poll to a sample of about 300 corporate recruiters who recruit at the top business schools. From a list of schools in the survey, the recruiters are asked to rank the top five programs from which they prefer to recruit. Those schools which are given the highest preference by a particular company are awarded a score of five, and a school ranked fifth receives a score of one; the other schools on the list receive a score of zero for that employer. In addition, recruiters are asked to name the best schools in areas such as marketing, finance, and entrepreneurship, and the schools are scored based on their relative position against other programs in this survey. The scores are then compiled to compute a corporate ranking. The final ranking, a composite of the two scores, is not a simple average; *BW* "used a standard statistical technique to reflect the relative performance of the schools in each poll[1]." Table 1.1 illustrates the response rates for both the graduate and recruiter surveys for the history of the *BW* rankings (with the exception of 1996, which was unavailable).

USNWR bases their ranking on a mix of data collected from the schools themselves and on a set of reputational surveys sent to business-school deans, MBA programs directors, and corporate recruiters or CEOs. The score used to compute the rank comes from a formula applied to each school involving four factors: reputation, placement success, student selectivity, and graduation rate. Each of these factors is determined from a subset of factors. Reputation is determined by two surveys, one sent to corporate recruiters or CEOs and the other to business school deans and MBA program directors. Placement success is determined by median starting base salaries (excluding all bonuses), the proportion of students employed at graduation, the proportion of students employed three months after graduation, and the ratio of the number of firms that recruit MBA's on campus to the number of graduates. Student selectivity is based on average Graduate Management Admission Test scores (henceforth GMAT, the standardized test used for admissions to MBA programs: almost identical to the SAT, used for undergraduate admissions), undergraduate GPAs, and the school's acceptance rate. Finally, graduation rate is determined by the combined percentage of students from the last two classes to earn MBA's within two years of enrollment. The score for each factor is determined by

[1] See pp.78-79 Byrne (1988)

giving the school with the highest marks a score of 100 for that category and rating every other school as a percentage of the top school. *USNWR* then calculates each school's overall score out of 100 by computing a weighted average of the school's grades on each factor.

Problems with the Rankings

Even from this short discussion it is obvious that both ranking systems have significant flaws in their assessments of quality. As Tracy and Waldfogel (1994) point out in their paper, the *BW* rankings cannot even meet a fairly low standard: "Rankings should be based on measurable criteria that are comparable across programs[1]." The two questions cited earlier in this paper from the *BW* survey violate this standard: "Do you believe your MBA was worth its total cost in time, tuition, and lost earnings?" and "Overall, how did the quality of teachers compare with others you have had in the past?" Both questions depend on highly individualized criteria, such as one's expectations of the value of an MBA and the experiences one has had with teachers in the past. Many of the other questions are similarly problematic. As a result, the *BW* graduate scores across institutions do not necessarily reflect any differences in the programs themselves, but reflect differences in the attitudes and experiences of the students in the programs. In addition, as Table 1.1 demonstrates, the results are not even comparable for one institution from year to year because *BW* varies the questions in the graduate survey. Even though *BW* does not reveal the nature of its recruiter survey, it is safe to assume that survey suffers from the same problems as the graduate survey.

Although *USNWR* claims to make a more objective approach in their ranking system, it possesses many problems as well. First, the data that the magazine uses to score the institutions is reported by the institutions themselves, and as John Byrne has pointed out in every edition of the *BW* business school guide since 1993, different institutions report their data differently. For instance, some institutions may exclude minority candidates when reporting average GMAT scores while others include them, and some institutions may not include graduates working in low-paying non-profit positions when

[1] See p.3, Tracy and Waldfogel (1994)

reporting average starting salaries[1]. Thus, like *BW*, *USNWR* violates Tracy and Waldfogel's previously mentioned standard of comparable criteria. Furthermore, as mentioned before, *USNWR* calculates a weighted average of each school's score on each factor to come up with a final score. How are these weights determined? The magazine explains, "The weights applied . . . reflect the considered judgement of *U.S. News* about which measures of quality matter most[2]." The weights are not based on any kind of analysis, but subjective judgement of *USNWR* staff.

Context and Empirical Questions

It appears that these two sets of rankings are not necessarily measuring the quality of institutions in their rankings. Is this a problem? It depends on how the rankings are affecting the students, employers, and school officials that use them. A study conducted by James Monks and Ronald Ehrenberg in July 1999 suggests that the rankings are having significant effects.

The study examined the effects of the *USNWR* undergraduate rankings (almost identical in popularity and in methodology to the business school rankings) on the admissions outcomes and pricing policies of the undergraduate programs ranked. The researchers found that, as an institution falls in the rankings, it admits a larger percentage of its applicant pool, which declines in quality as measured by SAT scores in order to maintain the size of its enrollment. Also, as an institution falls in the rankings, it decreases the self-help portion of its financial package in favor of a larger percentage of grant aid in order to retain more students. This study is the motivator of the current examination; I expect to uncover similar trends with the business schools and will adopt Ehrenberg and Monks' methodology for portions of this research.

This paper will address how the *BW* and *USNWR* ranking systems affect the admissions outcomes, pricing policies, and placement outcomes of the business schools they rank. Specifically,

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[1] See Ch. 4, Byrne (1993, 1995) and Green & Reingold (1999)
[2] See p. 12 of "Best Graduate Schools," *USNWR* (2000)

- **Admissions outcomes:** How does a change in ranking affect the selectivity of an institution as measured by the institution's admission rate, yield (number of accepted applicants / number of enrolled), enrollment and the quality of applicants as measured by GMAT scores, undergraduate GPA, pre-MBA salary, student age, and years of work experience?
- **Pricing Policies:** How does a change in ranking affect the tuition charged by the business school and the amount of grant and scholarship aid provided (as measured by the average loan outstanding per student)?
- **Placement Outcomes:** How does a change in ranking affect the career prospects of the graduates from the program as measured by the program's placement rate (percentage of class with job offers at graduation), the students' average starting salary, the average change in salary, and the average number of job offers obtained by each student?
- In addition, the research will attempt to determine which, if either, of the two ranking systems is more influential.

Data

The data used for this study originated from the six editions of the *Business Week* rankings guide, *Business Week s* Guide to the Best Business Schools. This publication contains detailed data on selectivity, student quality, and career placement. In addition, the annual *USNWR* publication dedicated to the best professional schools was used to obtain the *USNWR* ranking (no other data was used from the magazine).

I have selected a group of twenty institutions that have repeatedly been among the top twenty in *BW*'s ranking because *BW* provides more complete data on these elite institutions[1]. Since these are the most prestigious and influential of the business schools, it makes sense to include all of them in this examination. On the other hand, by restricting the sample to only the top institutions, the uncovered relationships may be weaker because

[1] The business schools are: Kellogg (Northwestern), Harvard, Sloan (MIT), Wharton (University of Pennsylvania), Tuck (Dartmouth), Johnson (Cornell), University of Michigan, University of North Carolina, Stanford, Fuqua (Duke), Darden (University of Virginia), University of Chicago, University of

they suffer from the effects of a restricted range. Unfortunately, *BW* ranks no more than the top twenty-five schools, so it is impossible to significantly expand the range of the data for the purposes of this study.

BW has published its guide biannually since 1991, and it published its first ranking in a special edition of its magazine in 1988 (which was expanded upon in the first full edition in 1990). It is hypothesized that the ranking from the year before each guide is published affects the statistics published in each guide. For instance, the 1993 *BW* contains data on the admissions rate, GMAT scores, and undergraduate GPA of the class entering in 1992. This class would have made use of the rankings published in 1991 (the most recent guide available) instead of those contained in the 1993 publication (which would be used by the class entering in 1994). Similarly, the employers responsible for the placement data in the 1993 publication are alleged to have referred to the rankings in the 1991 edition in making their recruiting decisions. As a result, the sample for this study is from five academic years, as opposed to six: 1990, 1992, 1994, 1996, and 1998 leading to a set of panel data of almost 100 observations.

In some years, one or more of the institutions were not ranked in the top 20, and, as a result, detailed data used in this analysis was not available, so they were dropped from the sample in those years. Specifically, this occurred six times leading to a full sample of only 94 observations. In addition, four other variables were not available for all 94 observations. Pre-MBA salaries and average number of job offers per student were not included in the 1991 publication (for academic year 1990), leading to 75 observations of pre-MBA salaries (this also led to 75 observations of the change in salary variable) and 74 observations of the job offers variable. Loan outstanding data was not published in the 1991 edition either, nor was it accessible for academic year 1996, so 56 observations were used in this analysis for that variable. Finally, the work experience variable was not consistently reported, and was absent in 32 instances leading to 62 observations of the variable. Since all of this missing data was evenly distributed across institutions and the sample size is still robust, I do not see it biasing the results of this study in any significant

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Indiana, Carnegie-Mellon, Columbia, Anderson (UCLA), Haas (UC Berkeley), Stern (NYU), and University of Texas at Austin

way. As a reference, summaries of all of the variables used in this analysis are included in Table 1.2.

Chapter 2:
Admissions Outcomes and Pricing Policies

Methodology

To address the question of how a change in ranking affects an institution's selectivity, I will employ the methodology utilized by Monks & Ehrenberg in their examination of undergraduate institutions. The model developed in that paper hypothesizes a statistical relationship between an institution's admissions outcomes and its *USNWR* ranking from the previous year. For admissions outcomes in this study, an institution's acceptance rate, full-time enrollment, yield rate, average GMAT score, average undergraduate GPA, average pre-MBA salary, average age, and average years of work experience were each used as the dependent variable in Monks & Ehrenberg's model[1]. To determine the effects on pricing policies, tuition and average loan outstanding per student were used as the dependent variable in the model. In addition, the model included binary dummy variables to control for yearly effects and effects attributable to the nature of each individual institution. To compare the relative influence of *BW* and *USNWR*, I employed the same model for the same years and same number of observations, replacing only the *BW* ranking with the corresponding year's *USNWR* ranking. Both the coefficient on the lagged rank variable and the relative fit of the models will serve as comparison points[2].

Empirical Results for *BW*: Admissions Outcomes

Table 2.1 presents the results of the analysis of the effects of the *BW* rank on admissions outcomes and pricing policies. The first column presents the results of the relationship between an MBA program's admissions rate (ratio of the number of students admitted to the entire applicant pool) and the *BW* ranking of the program from the

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[1] A log-odds model was used for acceptance and yield rates and found the same pattern as the original model; those results are not presented here.

[2] In addition, both rankings were included in a joint model; their relatively low correlation of .67 made this possible. When both were significant individually, they would both be significant and of the same magnitude in the joint model, and the joint model would have a better fit than the individual models. This proves that both ranking systems have separate significant effects, but the results are similar to those presented here and thus are excluded.

previous year. As the entry in the second row demonstrates, a fall in the ranking of a program (which is equivalent to a higher rank: i.e. from 4th to 5th) results in a statistically significant increase of .0055 in that program's admission rate. This is more than half of a percentage point, demonstrating that a fall in the rankings forces an institution to accept a greater percentage of students from its applicant pool to meet the target for its incoming class. This decrease in selectivity originates from one of two sources. As a result of the fall in ranking, fewer students apply to the program, so even if the same number of students are admitted, the admission rate will rise. Otherwise, when an institution falls in the ranking, it may expect fewer students to accept its offer of admission, and thus admit a larger number of students to ensure meeting its target in the face of a lower yield rate (ratio of applicants who enter the program to the number of accepted applicants).

The average acceptance rate for the institutions in the sample for the five years measured is .2279 with a standard deviation of .0921. Thus, for a one-slot change in rank, an institution's acceptance rate will increase by 1/17th of a standard deviation. To illustrate the magnitude of this change, I will present an example. In 1994, Duke University's Fuqua School of Management accepted 26% of its applicants, of whom 57% enrolled in the university to constitute its class of 660 people. Thus, the program had about 4,450 applicants of which it accepted 1,160 people. If the university fell in the rankings by one spot, its acceptance rate would increase to about 26.5%. If Duke admits the same number of students, this means its applicant pool shrunk to 4,377, a decrease of about 2%. For more selective institutions such as Stanford or Harvard, the impact of a change in rank will be even greater.

The second column of Table 2.1 presents the effects of *BW*'s rankings on a program's yield rate. The results suggest that the rankings have no significant effect on the propensity of students to enroll in the program. In light of the previous finding, this result raises a question: if programs are admitting a greater percentage of applicants when they fall in the rankings, but they are receiving the same yield, are they growing their programs each year? The data actually suggest this is not the case. The results in column three show no statistically significant impact on the full-time enrollment of these programs resulting from a change in ranking. Perhaps the students the school is accepting on the

margin are more likely to matriculate than their accepted peers because these candidates on the margin are of lower quality and thus have fewer options from which to choose.

To test this hypothesis, the fourth through seventh columns relate hypothesized measures of quality to the institutions ranking. These columns report average GMAT, average undergraduate GPA, average pre-MBA starting salary, average age, and average years of work experience, respectively. As the fourth column indicates, as an institution falls in the rankings, the average GMAT scores of its students decline by 1.42 points for every single-place drop. The average GMAT score for the sample was 649.2 with a standard deviation of 23.04. This means that an institution that falls by seven places in the rankings will see the average GMAT scores of its incoming class decline by about ten points, or almost one half of a standard deviation.

Similarly, the results in the fourth column show that an institution which falls one place in the ranking will see the average GPA of its incoming class fall by about .0052 points. The average GPA for the sample was 3.336 with a standard deviation of .115. This means that a program which falls ten slots in the ranking would find the GPA of its incoming class fall five-tenths of a point (i.e. from a 3.45 to a 3.4), which is almost half of one standard deviation.

Taken together, the past four results indicate that an institution is forced to admit a larger percentage of students from its shrinking applicant pool, which decline in quality in order to maintain the size of its class when it falls in the ranking. For an institution which is climbing in the ranking (such as Cornell which jumped from 18th in 1996 to 8th in 1998), the future is bright; the school can select a smaller number of higher quality applicants from its growing pool of talented candidates.

The next measure of quality used, average pre-MBA salary, which is found in the fifth column of Table 2.1, was not found to have a statistically significant relationship with the lagged ranking of the school. This may be for a number of reasons. First, the relationship may exist, but it is masked because of measurement error in the data. *BW* mentions in a number of its editions that the salary data is self-reported from a survey of the business school's students. Also, the 1998 pre-MBA salary data is rounded to the nearest thousand (i.e. it is reported as $48,000 instead of $47,734), while the other three

years of data are reported to the nearest dollar. A second, more plausible explanation is that pre-MBA salary is not a strong indicator of quality and is more closely related to the location of the school and / or the specialties of the programs than the ranking of the overall program (i.e. Wharton may attract higher-paid students because of the quality of its finance department, because careers in financial services tend to be more high paying on average than other industries, so Wharton will have candidates with higher pre-MBA salaries regardless of their quality).

The final two alleged measures of student quality, age and work experience, were revealed to have a statistically significant relationship with the *BW* rank in the opposite direction of what was hypothesized. The hypothesis was that, as a school climbed in the rankings, it should attract more experienced, and thus older, applicants, but it was found that an improvement in rank was linked to a younger, less-experienced incoming class for a school. For a decrease in rank by one place, a program's average student age is shown to increase by .036 years and the average student's years of work experience increases by .0381 years. The average program's student age in the sample was 27.04 with a standard deviation of .724 and the mean number of years of work experience was 4.35 with a standard deviation of .4615.

What explains this unanticipated finding? First, it is worthwhile to note the low R-squared level the model has for these two variables. Age has one of the worst fits of any of the models at .4602, and work experience is even lower at .1640. Also, the results are statistically significant from zero only at the 10% level. This suggests that the model may simply be unable to account for much of the variance in these two variables, leading to inaccurate estimates of the coefficients[1]. Secondly, age and work experience may not be clear indicators of student quality. Since almost all students entering into MBA programs have been in the work force, older students will probably have higher salaries. If these students are still willing to give up their salary for two years to attend business school, it may be a signal of lower quality. Also, years of work experience does not control for the quality of the position, so while we may anticipate that a business school that increases in

[1] Work experience and pre-MBA salary were tried as controls in the age regression to improve the model, but the results were not statistically significant and are not reported here.

the rankings can expect more experience from its candidates, it may just attract those candidates with *better* experience.

For instance, investment banking is a career path from which many successful MBA's come. The average length of time most people spend in an investment banking position is only two to three years. These few years, however, are filled with grueling seventy to one-hundred hour weeks working with a variety of industries and companies and problems, leaving the bankers with a strong work ethic and an extremely high degree of experience. While the time period is short, the learning is extremely intense. Such is the case with many of the career paths most valued by MBA admissions offices. Many entrepreneurial ventures, high-technology companies, and management consulting firms offer the same intense learning experience. It may be the case that a greater percentage of the higher quality applicants have worked in these positions, leading to the seemingly negative correlation between work experience and student quality. The results would become more clear if data were available on the career make-up of the class. Pre-MBA salary was tried as a proxy for pre-MBA position, but was not found to be significant. Pre-MBA salary may not be the best indicator since many of the careers mentioned offer a large amount of compensation aside from salaries in the form of performance bonuses, stock options, and the opportunity to co-invest with the firm. Also, the salary variable suffers from potential problems as mentioned before.

Empirical Results for *BW*: Pricing Policies

Columns nine and ten of Table 2.1 report the relationship between the *BW* ranking and two indicators of pricing policies at the MBA programs: full-time tuition and average loan outstanding per student at graduation. Tuition is the well-known price the program charges, and loan outstanding is a subtle measure of how much financial support the MBA program is providing its students. If average loan per student decreases without a corresponding decrease in tuition, institutions are offering a price discount through a greater level of grant and scholarship aid in order to attract higher-quality students from its shrinking applicant pool.

It was hypothesized that tuition levels are unresponsive to changes in rank, but that a relationship exists between outstanding loans and *BW* ranking. This result was found in the study of undergraduate rankings by Monks and Ehrenberg; the explanation cited by the authors is that schools do not visibly change their tuition, but vary the percentage of self-help and grant aid offered to incoming students in response to changes in rankings. The authors conjecture that tuition is an indicator of an institution's quality, and so an institution would not change its tuition level (and thus its quality perception) in response to shifts in rankings. The results in this paper conform to this hypothesis and explanation. As the second entries in column nine and ten demonstrate, tuition levels do not vary in accordance to *BW* rankings, but the levels of outstanding loans do change with the *BW* rank. While this result is statistically significant and the model has a good fit (adjusted R-square of .9327), the magnitude is rather small; the mean level of outstanding loans was $33,914 with a standard deviation of $10,501, so a single-place change in rank leads to a change in loans equal to $1/35^{th}$ of one standard deviation. These results suggest that administrators at MBA programs do respond to changes in rank, but they only respond inconspicuously and incrementally.

Empirical Results for *USNWR*: Admissions Outcomes

Table 2.2 presents the results of the impact of the *USNWR* ranking on admissions outcomes and pricing policies. The structure of Table 2.2 is identical to that of Table 2.1. The first column refers to admissions rates. Similar to the *BW* results, a single-place change in rank leads to a statistically significant change in a program's acceptance rate of .0082, or about $1/11^{th}$ of one standard deviation. This result is slightly larger than the *BW* result and reinforces the idea that an institution that falls in the rankings is forced to become less selective and one that improves in the rankings can become more selective.

The second column demonstrates that a change in ranking is accompanied by a change in an institution's yield rate of .0073. The mean yield for the sample was .5746 with a standard deviation of .1263, so this represents a change of $1/17^{th}$ of one standard deviation. Returning to the Duke example used earlier, if Duke fell one place in the *USNWR* rankings, its yield rate would fall from 57% down to 56.27%. If the school

wished to maintain its class size of 660 people, it would have to admit 15 more people, a change of 1.3% (from 1,157 to 1,172).

Like the *BW* ranking, these changes in acceptance rates and yield rates do not affect the program's enrollment, as shown in column three. Also, a change in *USNWR* rank is not associated with any changes in student quality, as shown by columns four through eight. It is consistent with the *BW* results to find no relationship between pre-MBA salary, age, or years of work experience and the *USNWR* rank, but the absence of a relationship with GMAT scores and undergraduate GPA is notable.

The second, fourth, and fifth columns of Table 2.2 seem to present a different story than that revealed by the analysis of the *BW* rankings. Since a program's yield rate falls as its *USNWR* ranking declines, the institution must actually be admitting a larger number of students in order to maintain the size of its class. However, these students do not decline in quality, as is the case in the *BW* analysis.

It seems that changes in *USNWR* ranking do not have a strong effect on students' decisions about which institutions to which to apply, so each school maintains the size of its applicant pool, but the rankings do have an effect on where students finally decide to attend, as evidenced by the change in yield rates. So even though students are less likely to accept the offer of a school which falls in the ranking, by accepting *more* students overall, the school manages to keep more of the high quality students (who still decided to apply to the institution), resulting in no change in GMAT scores or undergraduate GPAs of the school's students.

Empirical Results for *USNWR*: Pricing Policies

Columns nine and ten of Table 2.2 present the relationship between the *USNWR* rank and tuition and loan outstanding per student. The results here are exactly the opposite than those of the *BW* analysis and those of the Monks & Ehrenberg study. A change in ranking is associated with a statistically significant change in tuition of $218.61, but not with a change in average loan per student (the coefficient of loan outstanding per student is in the right direction and of a similar magnitude as the prior analysis, but it is not statistically significant). The average tuition level for the sample was $18,939 with a

standard deviation of $5,396, so a change in rank leads to 1/25th of one standard deviation change in tuition level. It is unclear why a program would respond to a change in its *BW* rank by increasing the grant and scholarship aid provided to students, and it would respond to a change in its *USNWR* rank by lowering the posted level of tuition.

BW* versus *USNWR

The most notable comparison between Tables 2.1 and 2.2 is their striking similarities. The fit of the two models rarely varies by more than .01, and the direction and magnitude of most coefficients are similar as well. It is important to recognize, however, that most of the variance in these dependent variables is captured by inherent differences in the institutions themselves and changes which occur from year to year (represented by the institutional and year dummy variables). The amount of variance explained by the rankings is relatively small in comparison, and the magnitude of the results is fairly small as well. Having said that, it becomes important to scrutinize the seemingly small differences between the two ranking systems.

For admissions rates, GMAT scores, undergraduate GPAs, average ages, years of work experience, and levels of loan outstanding, the *BW* rank serves as a better explanatory variable (as measured by the adjusted R-square) than the *USNWR* rank, while *USNWR* better explains yield rates and tuition levels[1]. This result suggests that the *BW* ranking system is slightly more influential than that of *USNWR*, which is not a surprise since *BW* publishes an entire book on MBA programs alone, while *USNWR* simply includes the ranking with an issue geared to graduate programs in general.

This distinction explains the differing results in admissions outcomes for the two variables. Since *BW* publishes a very detailed book along with its rankings, it allows students who use it as a resource to obtain quite a bit of information on each program and deter them from even applying to lower ranking programs. This leads to lower applicant pools with lesser quality students. Since *USNWR* only publishes its rankings and a profile of the top ranked school, students using it as a reference have less information on each

[1] *USNWR* better explains pre-MBA salaries as well, but since the result was not statistically significant, it is excluded here.

program and are more likely to apply to schools that are ranked lower and obtain further information later, using *USNWR* more to make their final decisions. This leads to the association of yield rates with the *USNWR* rank, without a corresponding change in student quality.

Chapter 3:
Career Outcomes

Methodology

To determine how a change in ranking affects career outcomes, two different models were employed. The first model is identical to that used in the preceding chapter, hypothesizing a statistical relationship between one of four measures of career outcomes to one of the two ranking systems from the prior year. The four variables used are average starting salary, placement rate, average number of job offers per student, and average change in salary (average starting salary minus pre-MBA salary). The second model includes average GMAT scores and average undergraduate GPA as controls for the quality of the students in the programs as separate from the program itself.

Empirical Results for Career Placement Outcomes

Tables 3.1 and 3.2 present the results of the statistical analyses of the impact of the *BW* and *USNWR* rankings, respectively, on career outcomes for MBA programs. It was hypothesized that a favorable change in a school's rankings would attract a larger number of more prestigious recruiters to that MBA program. As a result, when a program found itself ranked more highly, its students should be better able to find high-paying jobs, resulting in an increase in a program's placement rate and an increase in the average number of job offers obtained by each student and the average starting salary of those offers. The overall change in salary for each program should increase as well.

The data completely refuted these hypotheses. No statistically significant relationship was found between a program's placement statistics and the *BW* rank from the previous year, and only one variable had a statistically significant relationship with the *USNWR* rank[1]. The presence of controls had no effect either[2].

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[1] This statistically significant relationship is for the average change in salary variable, and it can be found in column eight of Table 3.2. Since it is the single significant result of sixteen models, it is relatively small in magnitude (1/41st of one standard deviation), and it is only significant to the 10% level, it is excluded from the following discussion.

[2] A log-odds model was used for placement rates with both ranking systems and yielded no relationship either; the results are excluded from this paper.

There are three possible explanations for the absence of any relationship. First, the *BW* ranking is actually composed of two separate rankings. One of those is based on student surveys and the other is based on surveys of recruiters, and the final ranking is a weighted average of the two. Perhaps recruiters do not react to the overall ranking, but they follow the recruiter ranking, so the relationship is masked. This explanation is highly unlikely because there is high correlation of .8 between the recruiter ranking and the overall ranking; if career outcomes are closely related to recruiter rankings, there should be a fairly strong relationship with overall ranking as well. *USNWR* also incorporates a recruiter survey in its ranking scheme, which accounts for only 20% of the overall ranking score. This survey is a simple reputational survey and is also unlikely to be highly influential in recruiters' decisions. To verify these hypotheses, an analysis was done with the *BW* and *USNWR* recruiter surveys. Neither was found to be statistically significant, and are not reported here.

The more likely explanation is that the rankings do not influence recruiters' decisions. This is evidenced by the fact that the list of top 10 recruiters at each program (which is provided in the *Business Week* data) does not significantly change from year to year. It is also evidenced by the high amount of the variance in starting salaries and average number of job offers is explained by the institutional variables (i.e. Harvard students are paid roughly $3000 more than Northwestern students in any given year for any differing qualities of classes simply because of Harvard's identity). It is likely that the schools chosen by companies at which to recruit is based upon past history and success with that school and based on alumni relationships. Without a proven track record at the company or alumni at a firm, it is unlikely that a firm would suddenly start recruiting at a school that jumped a few places in the *BW* rankings. Even if a school falls drastically in the rankings, a company is unlikely to drop a historically successful school from its schedule or make fewer offers at that program. This is also supported by a study conducted by Joseph Tracy and Joel Waldfogel, which found that the value-added by a business school separate from the quality of its students, was strongly related to the number of alumni that were currently CEO's. Employers have much more information about the various business schools than prospective students because of alumni

connections, and as a result, they rely much less heavily on the information provided by the *BW* and *USNWR* rankings. This hypothesis is further supported by the fact that placement outcomes were not found to be related to GMAT scores or undergraduate GPA. Regardless of the quality of a program's incoming students, employers exhibit unchanging behaviors in terms of salaries and job offers. Although data on graduating GPAs is not available, it seems that employers are paying more attention to past relationships than current ranking or small changes in student quality.

The final explanation is that recruiters do pay attention to the rankings, but they have a longer-term horizon than students do. As previously stated, recruiters seem to rely heavily on past experience and relationships in making decisions about various MBA programs, and as a result they are not beholden to any single-year ranking in making their decisions. Since recruiters continually return to the schools, if Northwestern falls from 3rd to 7th in one year, recruiters are not going to stop going there, but if the school remains in 7th for a few years, and even falls a little further, employers may start to re-evaluate their decisions. Students only have to pay attention to the most current ranking of the school, since that is what most affects them, but employers might pay more attention to the average rank of the school. This hypothesis is tested in the following chapter.

Chapter 4:
Five-Year Averages

Methodology

Based on the reasoning in the previous chapter, the *BW* and *USNWR* average ranking of each school during the five-year period was calculated and used in place of the single year-ranking variable. Although the current methodology originated because of questions concerning career outcomes, the technique has been applied to the admissions outcomes and pricing policies of the programs as well. The first attempt to conduct this analysis utilized the same model from the previous two chapters, which included the institutional dummies, but this proved to be problematic.

For each institution, its five-year average ranking was calculated and used in each of the five years as its rank, leading to five observations of the same rank for each variable. Since each school had the same five-year average for each set of years, there was perfect multicollinearity between the ranking variable and the institutional dummies. The following example illustrates the problem; this data set has three universities ranked for three years:

University	Rank	Three-Year Average Rank	Institution B	Institution C
A	1	1.33	0	0
B	3	2	1	0
C	2	2.67	0	1
A	2	1.33	0	0
B	1	2	1	0
C	3	2.67	0	1
A	1	1.33	0	0
B	2	2	1	0
C	3	2.67	0	1

Every instance of Institution A (both dummy variables zero) in the data set is perfectly correlated with an average rank of two, just as every instance of Institution B is perfectly

correlated with an average rank of 2, and every instance of Institution C is associated with an average rank of 2.67.

In spite of this problem, the statistical package used for this study was still able to calculate all of the regressions after automatically removing some of the institutional dummy variables. The results, however, were statistically suspect, as evidenced by the prior discussion and the fact that the adjusted R-square for the *BW* and *USNWR* models were identical to the thousandths place. The results are included in the appendix in Tables A1-A4, but the remainder of this chapter will not focus on them.

To avoid the problem of multicollinearity, the institutional dummy variables were excluded from the regression. Unfortunately, quite a bit of explanatory power is lost from the model by doing this, but this solution produced more meaningful results than the alternative. Despite this method, the results for *USNWR* are still not theoretically sound because many of the dependent variables in the model are also used by *USNWR* in calculating the yearly rank. For the one period case, when each dependent variable was statistically related to the prior year's ranking, this posed no problem, but using the five-year average of the rank for each year has created a circular causation relationship[1]. While the results may still indicate various relationships in the data, they cannot be accepted at face value. As a result, the bulk of this analysis will focus on the *BW* model[2][3].

Empirical Results for Admissions Outcomes

Table 4.1 presents the effects of the five-year average *BW* rank on institutions' admissions outcomes and pricing policies. Since the explanatory variable is now an institution's five-year average rank instead of its one-year rank, the interpretation of the coefficients is not as straightforward because a one-unit change in average rank is more extreme than a comparable change in yearly rank.

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[1] Because of this problem, it did not make sense to run a single model with both average rankings included.

[2] Enrollment, pre-MBA salary, age, years of work experience, tuition, loan outstanding, and number of job offers per student are all not used in the *USNWR* calculations, so these results are meaningful

[3] A log-odds model was used with both ranking systems for admissions, yield, and placement rates. The results displayed the same patterns as the linear model and are not included.

As the first column of the table shows, a one-slot change in an institution's average rank is associated with a statistically significant increase in its acceptance rate of .0053, which is roughly the same magnitude as the one-year case. As the next column shows, an institution's yield falls by .0141 or 1/9th of one standard deviation for each single-place change in a programs average rank. Similar to the *USNWR* one-year findings, when an institution's average rank falls by one place, the institution is forced to accept a greater number of students to offset the effects of a declining yield rate. The difference between the current results and the one-year model lies in column three. Not only does an institution have to admit more students who are less likely to enroll in the program as the average rank declines, but the institution has to shrink the size of its program by about 59 students for each single decline in average rank.

The picture for an institution whose average rank falls gets even bleaker in columns four, five, and six. Columns four and five demonstrate that an institution's average GMAT will decline by 1.28 points and its average GPA will decline by .0082 for each single place decrease in average ranking. In addition, the average pre-MBA salary of its incoming class declines by $652 for a single-place reduction in average rank. The average pre-MBA salary in the sample was $43,358 with a standard deviation of $5,749, so a single place change in average rank corresponds to a change equal to 1/9th of one standard deviation.

While the GMAT and GPA numbers are comparable in magnitude to the one-year *BW* effect on quality, taken together with the selectivity outcomes and the pre-MBA salary result, it is clear that changes in an institution's average rank have stronger effects on its admissions outcomes that a single-year change. An institution whose average rank falters finds itself with a shrinking applicant pool that has declined in quality, and the school has to admit more of this less-talented group of people to meet its enrollment target. Even these lower-quality applicants in the new pool are less likely to accept the school's offer, so the school is forced to shrink the size of its class as well, losing valuable tuition revenue. The reasoning also applies to an institution whose ranking improves. Such an institution will enjoy such an increase in applicant interest, that it can admit a smaller percentage of its higher quality applicant pool and still slightly increase its

enrollment (thus increasing its tuition revenue). It will find the test scores and GPA of its students increasing, as well as an increase in their pre-MBA salaries (which might indicate better work experience).

As columns seven and eight show, no significant relationship was found between age and average rank or number of years of work experience and rank. It is unexpected that neither of these variables has any kind of systematic relationship with average rank, but this result indicates that neither of these variables are a clear indicator of student quality. This finding is consistent with the one-year *USNWR* result, but not with the weak positive correlation found between these two variables and the single-year *BW* rank in the second chapter. Interestingly enough, as shown in Tables A1 and A2 in the appendix, the work experience variable was significant in the average *BW* model and the age variable was significant in the average *USNWR* model when the institutional dummies were included. Both were in the same direction as and of similar magnitude to the *BW* one-year results, suggesting that a slight relationship does exist between rank and age and work experience. Since the relationship is not always picked up, its magnitude must be quite small.

While the *USNWR* results in Table 4.2 are not as reliable as those of *BW* because of the problem of circular causation, they reinforce the previous examination by demonstrating the same patterns as the *BW* analysis[1]. The results in Table 4.2 are in the same direction and of the same significance as those in Table 4.1. The magnitude of most of the *USNWR* results are larger than those of *BW*, but the magnitude is more than likely enhanced by the circularity of the rankings and the dependent variables[2]. It is important to note that, of the significant variables, neither enrollment nor pre-MBA salary is used in the *USNWR* calculations, so these results do not suffer from circularity. Both of these coefficients are similar in magnitude to those of *BW*, but the two models differ greatly in their fits. *BW* does a much better job explaining the variance in enrollment with an adjusted R-square of .4088 compared to *USNWR*'s fit of .2169, while *USNWR*'s model

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[1] The average rank models including the institutional dummy variables exhibit most of the same patterns as well; the results can be found in the appendix in Tables A1 and A2.

[2] The adjusted R-square for *USNWR* is also greatly enhanced for the dependent variables used in the *USNWR* rank calculations.

fits better for pre-MBA salary with an adjusted R-square of .6005 versus *BW*'s .3354. Because of the limited number of variables valid for comparison, no explanation can be drawn for the differences in explanatory power[1].

The implications of the past discussion are that students do have a somewhat long-term view of the programs. While they pay more attention to the current yearly rankings for their decision than recruiters do, their horizon is not completely short-term as is evidenced by the findings in this chapter. Students are less likely to accept an offer from (or even apply to) an institution that has been falling in the rankings for a few years than to accept an offer from one that has fallen for a single year.

Empirical Results for Pricing Policies

Columns nine and ten of Table 4.1 present the relationship of tuition and loan outstanding per student to the five-year average *BW* rank. Both measures of pricing polices have a statistically significant relationship with the average ranking variable. For a one-place change in average rank, an institution will change its tuition by $395.33 or about $1/14^{th}$ of one standard deviation, and the average loan outstanding of its students will change by $1,012, which is roughly $1/10^{th}$ of a standard deviation. Since the magnitude of the change in loans is almost three times the size of the change in tuition, it does not seem that the change in tuition alone can be responsible for the change in loans. Instead, it seems that institutions respond to changes in ranking by first adjusting the amount of grants and scholarships provided to students and then adjusting tuition if the change is persistent. This result is consistent with the *BW* one-year case and the results of Monks & Ehrenberg, both of which found that tuition levels were not responsive to one-year changes in ranking, but forms of financial aid did respond to changes in ranking.

Unlike the admissions outcomes analysis, the *USNWR* results do not suffer from any circularity because neither tuition nor loan outstanding per student is used in the *USNWR* calculations of rank. The *USNWR* results, found in columns nine and ten of Table 4.2 display the same pattern as *BW*, with a change of one place in average *USNWR*

[1] *USNWR*'s stronger fit for pre-MBA salaries may be explained by the correlation of .6 between pre-MBA salaries, which are not included in the calculation, and average starting salaries, which are included.

rank corresponding with a statistically significant change of $489.30 in tuition and $1,008 in loan levels. While the difference between the two variables is not as great as it was for *BW*, the change in tuition alone is still not large enough to fully explain the accompanying change in loan levels.

It seems clear from the current analysis, together with the Monks and Ehrenberg study and the *BW* results in the second chapter, that institutions respond quickly and with subtlety to yearly changes in ranking by varying their levels of grant and scholarship aid while leaving tuition levels constant[1]. Only in the face of continuing changes in ranking, represented by the five-year averages, do the institutions reluctantly change their posted level of tuition. For those programs which fall in the rankings, they do not want to be perceived as losing quality by lowering their tuition, and even programs which improve in the rankings most likely do not want to sacrifice consistency by varying their tuition level on an annual or biannual basis in accordance with either of the ranking systems.

Empirical Results for Career Outcomes

Tables 4.3 and 4.4 verify the hypothesis laid out in the previous chapter; employers take a long-term view when it comes to making recruiting decisions based on a program's ranking. Whereas no relationship existed between either ranking system for one-year and any of the four measures of career outcomes, the averages of both ranking systems have significant relationships with all four measures.

Due to the circularity problems with *USNWR*, which apply to all but the job offers variables, this discussion will focus on the *BW* results in Table 4.3. The first and fifth columns of that table present the model for average starting salaries, without and with controls for student quality, respectively. The fit of the model with controls is .9408 as compared to .8908 without them, indicating that the model with controls is better. As the second entry in column five shows, a decrease in average rank of a single place leads to a $1,055 decline in average starting salaries. The mean starting salary for the sample was

[1] The significant impact of a single-year *USNWR* rank on tuition levels that was reported in Chapter 2 (Table 2.2) is the only finding inconsistent with this explanation. The explanation provided may be inaccurate and it may simply be the case that the programs pay more attention to *USNWR* than *BW*, as

$86,007 with a standard deviation of $28,261, so the magnitude of the change in starting salary is about 1/27th of one standard deviation.

Columns two and six contain the results for placement rates; the difference between the fit of the model with or without controls is negligible (.3337 versus .3338), indicating that the controls do not explain any of the variance in placement rates and should not be included in the model. Thus, the coefficient of .0045 in column two is more meaningful. The average placement rate for the MBA programs was .9186 with a standard deviation of .0697, so this change of almost half of a percentage point is between 1/15th and 1/16th of one standard deviation.

The model for the average number of job offers per student is found in columns three and seven. The fit of the model with controls, .5808 is significantly higher than the adjusted R-square of .5435 for the model without controls, so we will use the results in column seven. As the second entry in that column shows, a single-place change in average ranks leads to a change of .05 in the average number of job offers each student in that program will receive. This statistically significant result is equivalent to a little less than 1/10th of .5321, the standard deviation of the variable (the mean for the sample is 2.851 job offers per student). The *BW* coefficient is slightly smaller than the *USNWR* coefficient of .0674 in column seven of Table 4.4, which is about 1/8th of one standard deviation.

Columns four and eight present the results for the change in salary variable. The adjusted R-square is greater again for the model with controls, so the coefficient of $586 for that model will be discussed. The change in salary variable is equivalent to the difference between average starting salary and pre-MBA salary, and it represents in basic terms the amount of monetary value added to students in the marketplace by a program's MBA. There is a large amount of variation in this variable, resulting mostly from the wide range of starting salaries, so the coefficient for a single place change in average rank is equivalent to only about 1/37th of one standard deviation, which is $25,085 (the mean change in salary for the sample was $48,656).

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evidenced by the better fit of the average *USNWR* model for both measures of pricing policies (.6568 versus .5278 for tuition and .7251 versus .6560 for average loan outstanding per student).

The preceding discussion suggests that a university which falls in the rankings for one year may not see any change in the behavior of recruiters that come to its campus, but if that university maintains or continues its decline, fewer of its students will find themselves with job offers at graduation and those with job offers can expect a lower starting salary and will have fewer options. Moreover, the students will find the return on their education as measured by the change in their salaries decreasing as well. On the other hand, a university that improves year after year in the rankings will see a higher percentage of its students land a job offer, and those that do will receive higher-paying positions and possess more choices about their future career, finding that their MBA has added more value to them as job candidates.

BW* versus *USNWR

Despite the problems in the *USNWR* average rank analysis, some useful comparisons can still be made between the two ranking systems. The most notable comparison lies in the differences between the two models for admissions outcomes as compared to career outcomes. First, the difference in explanatory power for the two models differs drastically for career outcomes. For each of the variables used in *USNWR*'s ranking methodology, the adjusted R-square for the *USWNR* model is one-and-a-half to two times larger than that of *BW*[1]. This is not particularly surprising because of the circularity problem already discussed. The differences in explanatory power between the two models for career outcomes, however, is miniscule in comparison, even though average starting salaries and placement rates are used in *USNWR*'s methodology. Surprisingly, for placement rates the fit of the *BW* model is almost ten percent larger than that of the *USNWR* model. The larger relative fits seem to imply that recruiters base their decisions on the *BW* rankings to a much greater extent than the *USNWR* rankings[1]. This explanation fits with the hypothesis that *BW* is more influential due to the more complete nature of its publication.

[1] The variables used in *USNWR*'s methodology are admission rate, yield, average GMAT, and average GPA.

The only exception lies with the average number of job offers per student. This variable is not included in the *USNWR* calculation, and yet the *USNWR* model is a better fit with or without controls by a large margin (.6382 versus .5435 without controls and .6745 versus .5808 with controls). Although average number of job offers is not included in the *USNWR* methodology, the calculation does use the ratio of on-campus recruiters to graduates, and it seems logical that this ratio would have a strong positive correlation with the average number of job offers per student[2]. If this were the case, the stronger *USNWR* fit could be explained by circular causation in the data.

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[1] Although it may also be the case that students put less weight on *BW*'s average ranking than *USNWR*'s, but this explanation is inconsistent with the results of the one-year models and the hypothesized greater influence of *BW*.

[2] Unfortunately, *USNWR* does not publish these ratios in its magazine, so the comparison cannot be made.

Chapter 5:
Conclusion

This paper examined the effects of the *BW* and *USNWR* ranking systems on the admissions outcomes, pricing policies, and career placement outcomes at twenty of the most prestigious MBA programs. The analyses replicated the results of a recent study of undergraduate institutions in finding that admissions outcomes at MBA programs are highly related to the rank of that program. When an institution is ranked less favorably by *BW*, it has to admit a larger percentage of lower quality applicants (as measured by undergraduate GPA and GMAT scores) from its shrinking applicant pool. Similarly, if *USNWR* lowers the ranking of an institution, the institution must admit a larger number of students who are less likely to accept the institution's offer of admission. Prospective students pay quite a bit of attention to the *BW* and *USNWR* rankings in making their decisions of where to attend business schools. In addition, the institutions themselves react to the rankings in subtle ways. In response to changes in rankings, the institutions vary the amount of grant and scholarship aid they offer to students, and may even change their posted tuition levels.

Employers, however, are a different story. The recruiting choices of employers are not statistically related to a program's ranking or the quality of its students for a given year. Employers only respond to longer-term changes in rank. While the other two constituencies respond to long-term changes in rank as well, employers are the only group to react exclusively to changes over time. The reason for this is twofold. First, employers have long relationships with many of the programs from which they recruit. They have had historical success with the program and have numerous alumni in their ranks. To simply drop or devalue a program or with such ties after a one-year change in ranking would not be viable. Moreover, recruiters have limited resources, and to add a new program with limited history or to focus more on a historically weak program in response to a change in rank for one year is not feasible. Secondly, recruiters repeatedly return to the same programs, so their horizon is naturally longer-term than that of students (while administrators have longer-term horizons than even the employers, they must change their

behavior in response to student demands). Also, recruiters seem to give more weight to the *BW* rankings than the *USNWR* rankings.

These results suggest that students may not be behaving in their best interest by reacting to single-year changes in rank in either system. Based on employers' behavior, it makes more sense for a student to take a longer term view and attend a school which has been highly ranked for many years and which has been successful in its past placement efforts, even if that school is not currently ranked highly by either ranking (Stanford is an excellent example of a program which has exceptional success in placing its graduates into lucrative careers, but has never ranked above the number five spot in *BW*). Students who attend a program simply because it has jumped significantly in the rankings may find themselves quite disappointed when their career prospects are much bleaker than their counterparts at more lowly ranked institutions with better past overall rank and employer relations. In addition, the analysis shows that students behave somewhat like employers in giving more weight to the *BW* rankings than to *USNWR*, but the students still pay relatively more attention to *USNWR* than employers do.

Since most students attend business school to enhance their career prospects, student's could best maximize the return to their education by examining the data on placement rates, average starting salaries, and average number of job offers per student contained in multiple editions of *BW*, rather than a single year of the rankings themselves (for either publication).

On the other hand, employers are not necessarily behaving in their own best interest either. Employers intend on recruiting the best and the brightest students, but these students attend the MBA programs which are currently at the top of the rankings while the employers continue to recruit at historically well-reputed institutions, which may not currently be particularly highly-ranked. The employers are going to miss the best students and vice-versa. Thus, it might help employers to shorten their time frame slightly and pay less attention to history and alumni and more attention to the present (although this may not always be feasible due to corporate politics).

Implications

Despite the inherent flaws in both sets of rankings, these rankings have significant impact on the decisions of prospective students, employers, and the institutions themselves. Unfortunately, this creates a cycle; because more parties are basing their behavior in some part on these two ranking systems, the rankings will continue to grow in popularity and a greater amount of attention will be paid to them. The results of this paper clearly demonstrate that it is in a students best interest with respect to post-MBA employment to give some weight to the historical *BW* ranking (and the historical *USNWR* ranking to a lesser extent) of an institution, just as it is in an employer's best interest to take a harder look at the current rankings.

Due to the subjective and varying natures of both ranking systems, it is not clear what they are measuring, but this leads to another question: Does it even matter? The rankings seem to be measuring perceptions of quality, and if students want the best jobs, they want to go to the institution with the highest perceived quality, and employers do the same thing. In this way, the rankings serve as a tool for communicating between the two consumers, and if the goal of an MBA is simply to improve one's career prospects, then the rankings are somewhat serving their purpose.

On the other hand, if the goal of an MBA is to learn the most one can and to have a meaningful two-year experience, then the rankings' success is called into question. However, one benefit of the rankings is clear: they successfully disseminate information about the institutions. From there, it is up to the institutions and the publications to work a little more closely together to better determine academic quality, so that perceptions and reality can be better aligned.

Further Research

In conducted the current analysis, a number of areas for potentially productive further research have presented themselves:

- To better examine the effects of the rankings on the quality of incoming students, the average pre-MBA salary figures and the average years of work experience variable should be adjusted by the region of the program

(percentages of students from various areas) and by the different percentages of industries and functions represented in the incoming class. After making these adjustments, it is possible a relationship between average years of work experience and lagged rank may emerge. A relationship between single-year lagged ranking and pre-MBA salaries may be found as well.

- To further validate the hypothesis that recruiters do not change their behavior based on one-year rankings, a study of career placement outcomes could be conducted at the undergraduate level using the one-year and three- to five-year average *USNWR* rankings of those institutions.
- *USNWR* publishes rankings of the top fifty institutions each year, as compared with *BW*'s ranking of the top twenty to twenty-five every other year. To overcome any problems imposed by *BW*'s restricted range, all of the analyses could be redone for *USNWR* rank with a group of fifty institutions every other year (it would have to be done every other year because most of the relevant data is in the *BW* publication).
- To overcome the circularity problem in the five-year average *USNWR* data, one could use all ten years of USNWR rankings and perform the average ranking analysis with two- to three-year running averages on the following year outcomes (i.e. 1990-1992 average ranking impact on 1993 outcomes, 1992-1994 ranking impact on 1995 outcomes, etc). This would also solve the multicollinearity problem, allowing institutional dummy variables to be included in the model and thus better explore the long-term view analysis.

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